



REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only	
International Application No.	
International Filing Date	
Name of receiving Office and "PCT International Application"	
Applicant's or agent's file reference (if desired) (12 characters maximum) 005092.00057	

Box No. I TITLE OF INVENTION	
DEVICE AND METHOD FOR ULTRASONICALLY MANIPULATING FLUID-BORNE PARTICLES	
Box No. II APPLICANT <input type="checkbox"/> This person is also inventor	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)	Telephone No. (508) 481-4163
Protasis Corporation 734 Forest Street Marlborough, MA 01752 UNITED STATES OF AMERICA	Facsimile No. (508) 650-3671
	Teleprinter No.
	Applicant's registration No. with the Office
State (that is, country) of nationality: USA	State (that is, country) of residence: USA
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input checked="" type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)	This person is:
David Strand 16 Nason Hill Lane Sherborn, MA 01770 UNITED STATES OF AMERICA	<input type="checkbox"/> applicant only
	<input checked="" type="checkbox"/> applicant and inventor
	<input type="checkbox"/> inventor only (If this check-box is marked, do not fill in below.)
Applicant's registration No. with the Office	
State (that is, country) of nationality: USA	State (that is, country) of residence: USA
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<input checked="" type="checkbox"/> Further applicants and/or (further) inventors are indicated on a continuation sheet.	
Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE	
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	<input checked="" type="checkbox"/> agent <input type="checkbox"/> common representative
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	Telephone No. (617) 720-9600
Peter D. McDermott Banner & Witcoff, LTD 28 State Street, 28th Floor Boston, MA 02109-1775 UNITED STATES OF AMERICA	Facsimile No. (617) 720-9601
	Teleprinter No.
	Agent's registration No. with the Office 29,411
<input type="checkbox"/> Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.	

Continuation of Box No. III OTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

David Barrow
61 Lake Road West, Roath Park
Cardiff, Wales
CF235PH
UNITED KINGDOM

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

UNITED KINGDOM

State (that is, country) of residence:

UNITED KINGDOM

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Joseph Cefai
17 Quarry Road
Swansea, Wales
SA59DJ
UNITED KINGDOM

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

USA

State (that is, country) of residence:

USA

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No. V DESIGNATION STATES

Mark the applicable check-boxes below; at least one must be marked.

The following designations are hereby made under Rule 4.9(a):

Regional Patent

- ☐ **AP ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, MZ Mozambique, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZM Zambia, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT (if other kind of protection or treatment desired, specify on dotted line)
- ☐ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP European Patent:** AT Austria, BE Belgium, BG Bulgaria, CH & LI Switzerland and Liechtenstein, CY Cyprus, CZ Czech Republic, DE Germany, DK Denmark, EE Estonia, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, SI Slovenia, SK Slovakia, TR Turkey, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☐ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GQ Equatorial Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | | |
|--|---|---|
| <input type="checkbox"/> AE United Arab Emirates | <input type="checkbox"/> GM Gambia | <input type="checkbox"/> NZ New Zealand |
| <input type="checkbox"/> AG Antigua and Barbuda | <input type="checkbox"/> HR Croatia | <input type="checkbox"/> OM Oman |
| <input type="checkbox"/> AL Albania | <input type="checkbox"/> HU Hungary | <input type="checkbox"/> PH Philippines |
| <input type="checkbox"/> AM Armenia | <input type="checkbox"/> ID Indonesia | <input type="checkbox"/> PL Poland |
| <input type="checkbox"/> AT Austria | <input type="checkbox"/> IL Israel | <input type="checkbox"/> PT Portugal |
| <input type="checkbox"/> AU Australia | <input type="checkbox"/> IN India | <input type="checkbox"/> RO Romania |
| <input type="checkbox"/> AZ Azerbaijan | <input type="checkbox"/> IS Iceland | <input type="checkbox"/> RU Russian Federation |
| <input type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> JP Japan | |
| <input type="checkbox"/> BB Barbados | <input type="checkbox"/> KE Kenya | <input type="checkbox"/> SC Seychelles |
| <input type="checkbox"/> BG Bulgaria | <input type="checkbox"/> KG Kyrgyzstan | <input type="checkbox"/> SD Sudan |
| <input type="checkbox"/> BR Brazil | <input type="checkbox"/> KP Democratic People's Republic of Korea | <input type="checkbox"/> SE Sweden |
| <input type="checkbox"/> BY Belarus | <input type="checkbox"/> KR Republic of Korea | <input type="checkbox"/> SG Singapore |
| <input type="checkbox"/> BZ Belize | <input type="checkbox"/> KZ Kazakhstan | <input type="checkbox"/> SK Slovakia |
| <input type="checkbox"/> CA Canada | <input type="checkbox"/> LC Saint Lucia | <input type="checkbox"/> SL Sierra Leone |
| <input type="checkbox"/> CH & LI Switzerland and Liechtenstein | <input type="checkbox"/> LK Sri Lanka | <input type="checkbox"/> TJ Tajikistan |
| <input type="checkbox"/> CN China | <input type="checkbox"/> LR Liberia | <input type="checkbox"/> TM Turkmenistan |
| <input type="checkbox"/> CO Colombia | <input type="checkbox"/> LS Lesotho | <input type="checkbox"/> TN Tunisia |
| <input type="checkbox"/> CR Costa Rica | <input type="checkbox"/> LT Lithuania | <input type="checkbox"/> TR Turkey |
| <input type="checkbox"/> CU Cuba | <input type="checkbox"/> LU Luxembourg | <input type="checkbox"/> TT Trinidad and Tobago |
| <input type="checkbox"/> CZ Czech Republic | <input type="checkbox"/> LV Latvia | |
| <input type="checkbox"/> DE Germany | <input type="checkbox"/> MA Morocco | <input type="checkbox"/> TZ United Republic of Tanzania |
| <input type="checkbox"/> DK Denmark | <input type="checkbox"/> MD Republic of Moldova | <input type="checkbox"/> UA Ukraine |
| <input type="checkbox"/> DM Dominica | | <input type="checkbox"/> UG Uganda |
| <input type="checkbox"/> DZ Algeria | <input type="checkbox"/> MG Madagascar | <input checked="" type="checkbox"/> US United States of America |
| <input type="checkbox"/> EC Ecuador | <input type="checkbox"/> MK The former Yugoslav Republic of Macedonia | |
| <input type="checkbox"/> EE Estonia | <input type="checkbox"/> MN Mongolia | <input type="checkbox"/> UZ Uzbekistan |
| <input type="checkbox"/> ES Spain | <input type="checkbox"/> MW Malawi | <input type="checkbox"/> VC Saint Vincent and the Grenadines |
| <input type="checkbox"/> FI Finland | <input type="checkbox"/> MX Mexico | <input type="checkbox"/> VN Viet Nam |
| <input type="checkbox"/> GB United Kingdom | <input type="checkbox"/> MZ Mozambique | <input type="checkbox"/> YU Yugoslavia |
| <input type="checkbox"/> GD Grenada | <input type="checkbox"/> NO Norway | <input type="checkbox"/> ZA South Africa |
| <input type="checkbox"/> GE Georgia | | <input type="checkbox"/> ZM Zambia |
| <input type="checkbox"/> GH Ghana | | <input type="checkbox"/> ZW Zimbabwe |

Check-boxes below reserved for designating States which have become party to the PCT after issuance of this sheet:

- | | | |
|--------------------------------|--------------------------------|--------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

Supplemental Box

If the Supplemental Box is not used, this sheet should not be included in the request.

1. If, in any of the Boxes, except Boxes Nos. VIII(i) to (v) for which a special continuation box is provided, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No." (indicate the number of the Box) and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:
 - (i) if more than two persons are to be indicated as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;
 - (ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;
 - (iii) if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;
 - (iv) if, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;
 - (v) if, in Box No. V, the name of any State (or OAPI) is accompanied by the indication "patent of addition," or "certificate of addition," or if, in Box No. V, the name of the United States of America is accompanied by an indication "continuation" or "continuation-in-part": in such case, write "Continuation of Box No. V" and the name of each State involved (or OAPI), and after the name of each such State (or OAPI), the number of the parent title or parent application and the date of grant of the parent title or filing of the parent application;
 - (vi) if, in Box No. VI, there are more than five earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI.
2. If, with regard to the precautionary designation statement contained in Box No. V, the applicant wishes to exclude any State(s) from the scope of that statement: in such case, write "Designation(s) excluded from precautionary designation statement" and indicate the name or two-letter code of each State so excluded.

Continuation of Box IV:

McDermott, Peter D.
 Iwanicki, John P.
 Cohan, Gregory J.
 Linek, Ernest V.
 Malone, Dale A.
 Patton, Stephana E., Ph.D.
 McKenzie, James M.
 McNulty, Thomas
 Verni, Christopher

Box No. VI PRIORITY CLAIM

The priority of the following earlier application(s) is hereby claimed:

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country or Member of WTO	regional application: regional Office	international application: receiving Office
item (1) 04 June 2002	60/385,534	USA		
item (2) 08 July 2002	60/394,378	USA		
item (3)				
item (4)				
item (5)				

☐ Further priority claims are indicated in the Supplemental Box.

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office) identified above as:

☐ all items
 ☒ item (1)
 ☒ item (2)
 ☐ item (3)
 ☐ item (4)
 ☐ item (5)
 ☐ other, see Supplemental Box

* Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed (Rule 4.10(b)(ii)):

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / EP

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

Box No. VIII DECLARATIONS

The following declarations are contained in Boxes Nos. VIII (i) to (v) (mark the applicable check-boxes below and indicate in the right column the number of each type of declaration):

Number of
declarations

- | | | |
|---|--|---|
| <input type="checkbox"/> Box No. VIII (i) | Declaration as to the identity of the inventor | : |
| <input type="checkbox"/> Box No. VIII (ii) | Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent | : |
| <input type="checkbox"/> Box No. VIII (iii) | Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application | : |
| <input type="checkbox"/> Box No. VIII (iv) | Declaration of inventorship (only for the purposes of the designation of the United States of America) | : |
| <input type="checkbox"/> Box No. VIII (v) | Declaration as to non-prejudicial disclosures or exceptions to lack of novelty | : |

Box No. IX CHECK LIST; LANGUAGE OF FILING

This international application contains:

(a) in paper form, the following number of sheets:

request (including declaration sheets) : 7
description (excluding sequence listings and/or tables related thereto) : 53
claims : 24
abstract : 1
drawings : 14

Sub-total number of sheets : 99

sequence listings :
tables related thereto :

(for both, actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (c) below)

Total number of sheets : 99

(b) ☐ only in computer readable form (Section 801(a)(i))

(i) ☐ sequence listings
(ii) ☐ tables related thereto

(c) ☐ also in computer readable form (Section 801(a)(ii))

(i) ☐ sequence listings
(ii) ☐ tables related thereto

Type and number of carriers (diskette, CD-ROM, CD-R or other) on which are contained the

☐ sequence listings:
☐ tables related thereto:

(additional copies to be indicated under items 9(ii) and/or 10(ii), in right column)

This international application is accompanied by the following item(s) (mark the applicable check-boxes below and indicate in right column the number of each item):

Number of items

1. ☒ fee calculation sheet : 1
2. ☐ original separate power of attorney :
3. ☐ original general power of attorney :
4. ☐ copy of general power of attorney; reference number, if any: :
5. ☐ statement explaining lack of signature :
6. ☐ priority document(s) identified in Box No. VI as item(s): :
7. ☐ translation of international application into (language): :
8. ☐ separate indications concerning deposited microorganism or other biological material :
9. ☐ sequence listings in computer readable form (indicate type and number of carriers)
 - (i) ☐ copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application) :
 - (ii) ☐ (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter :
 - (iii) ☐ together with relevant statement as to the identity of the copy or copies with the sequence listings mentioned in left column :
10. ☐ tables in computer readable form related to sequence listings (indicate type and number of carriers)
 - (i) ☐ copy submitted for the purposes of international search under Section 802(b-quater) only (and not as part of the international application) :
 - (ii) ☐ (only where check-box (b)(ii) or (c)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-quater) :
 - (iii) ☐ together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column :
11. ☒ other (specify): Express Mail Certificate and return postcard :

Figure of the drawings which should accompany the abstract: Fig. 1

Language of filing of the international application: English

Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).



Peter D. McDermott
Banner & Witcoff, LTD
Agent

For receiving Office use only

1. Date of actual receipt of the purported international application:	2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

PCT

For receiving Office use only

FEE CALCULATION SHEET

Annex to the Request

International Application No.

Applicant's or agent's
file reference

005092.00057

Date stamp of the receiving Office

Applicant

PROTASIS CORPORATION

CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE 240.00 [T]

2. SEARCH FEE 936.00 [S]

International search to be carried out by EP
(If two or more International Searching Authorities are competent to carry out the international search, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FEE

Basic Fee

Where items (b) and/or (c) of Box No. IX apply, enter Sub-total number of sheets } 99
 Where items (b) and (c) of Box No. IX do not apply, enter Total number of sheets }

[b1] first 30 sheets 407.00 [b1]

[b2] 69 x 9 = 621.00 [b2]
 number of sheets in excess of 30 fee per sheet

[b3] additional component (only if sequence listings and/or tables related thereto are filed in computer readable form under Section 801(a)(i), or both in that form and on paper, under Section 801(a)(ii)):

400 x 0.00 = 0.00 [b3]
 fee per sheet

Add amounts entered at b1, b2 and b3 and enter total at B 1,028.00 [B]

Designation Fees

The international application contains 3 designations.

3 x 88 = 264.00 [D]
 number of designation fees payable (maximum 5) amount of designation fee

Add amounts entered at B and D and enter total at I 1,292.00 [I]

(Applicants from certain States are entitled to a reduction of 75% of the international fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D.)

4. FEE FOR PRIORITY DOCUMENT (if applicable) 15.00 [P]

5. TOTAL FEES PAYABLE 2,483.00

Add amounts entered at T, S, I and P, and enter total in the TOTAL box

TOTAL

☐ The designation fees are not paid at this time.

MODE OF PAYMENT

☒ authorization to charge deposit account (see below) ☐ postal money order ☐ cash ☐ coupons
☐ cheque ☐ bank draft ☐ revenue stamps ☐ other (specify):

AUTHORIZATION TO CHARGE (OR CREDIT) DEPOSIT ACCOUNT

(This mode of payment may not be available at all receiving Offices)

☒ Authorization to charge the total fees indicated above.
☒ *(This check-box may be marked only if the conditions for deposit accounts of the receiving Office so permit)* Authorization to charge any deficiency or credit any overpayment in the total fees indicated above.
☒ Authorization to charge the fee for priority document.

Receiving Office: RO/ USDeposit Account No.: 19-0733Date: June 3, 2002Name: Peter D. McDermottSignature: 